

Remarks

This Amendment is being submitted in reply to the Office Action dated October 27, 2004. Claims 1-22 are pending in the application, and the Examiner has rejected claims 1-22.

Claims 7 and 17-22 have been rejected under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter Applicants regard as their invention. More specifically, "1.5 to 2.0% water" in claims 7, 17, and 22 is unclear as to being measured by weight or by volume. Also, "hydraulic radius of 0.5 or less" in claim 18 is unclear because there is a lack of unit.

Claims 7, 17, and 22 have been amended to clarify the percentage of water as being a percentage of the weight of the sand mold mixture, as described on page 7, lines 20-22 of the specification.

Claims 16 and 18 have been amended to include "inch" as the unit of measure for the hydraulic radius. In addition, the specification (including Tables 4 and 5) has been amended to include "inch" as the unit of measure for the hydraulic radius. The hydraulic radius is defined in the specification as the area of the aperture divided by the perimeter of the aperture. In Figure 4, the hydraulic radius can be determined using the size (in inches) and the total open area (in square inches). Therefore, using the units of measure provided in Table 4, one can determine that the unit of measure for the hydraulic radius is an inch. In addition, inch(es) are used throughout the specification as the unit of measure for the apertures. Because no other units of measure are used, there is additional support in the specification for using "inch" as the unit of measure for the hydraulic radius.

Claims 1-22 have been rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,226,277 to Matalon in view of U.S. Patent 5,320,157 to Siak et al.

Matalon discloses rapidly drying a silicate binder in a sand mold having preferably two or more air permeable sides (perforated faces) by forcing or drawing air through the permeable sides of the mold box and the sand contained therein by application of air pressure or vacuum. The movement of air through the mold box and the sand mold does not generate an internal

pressure in the sand mold (lower the absolute pressure within the sand mold) to flash off the moisture in the sand mold as occurs in the present invention. Rather, Matalon relies upon the movement of air through the sand mold to dry the binder in the sand mold. Matalon neither teaches nor suggests using a vacuum to generate an internal pressure within the sand mold to flash off the moisture in the sand mold.

When an internal pressure is generated within a sand mold, the sand may move and create cracks and/or voids in the sand mold if no restraining member is used to restrain the sand. The restraining member helps contain the sand and allows moisture to be flashed off of the sand mold quickly without disturbing the sand mold. In addition, the restraining member maintains the pressure inside the sand mold at a level such that the moisture that vaporizes at the maximum rate can pass through the sand without causing popping and/or cracking of the sand mold. The permeable sides of Matalon allow the movement of air through the mold box and, therefore, the permeable sides do not serve the same function of restraining the sand mold to prevent cracks and/or voids in the sand mold. Matalon neither teaches nor suggests using the permeable sides to restrain the sand mold during vacuum treatment of the sand mold to prevent voids in the sand mold.

Although Siak et al. discloses the use of a vacuum to remove residual water from a sand core, nothing in Siak et al. either teaches or suggests using a restraining member to restrain the sand during vacuum treatment.

Because Matalon discloses the movement of air through a sand mold and Siak et al. discloses the use of a vacuum, there is no motivation to combine these references as they relate to different methods of drying a sand mold. One skilled in the art would not look to Matalon in determining how to use a vacuum to dry a sand mold, and one skilled in the art would not look to Siak et al. in determining how to move air through a sand mold to dry the sand mold. There must be a basis in the art for combining the references, and because these references relate to different methods of drying a sand mold, there is no basis for combining these references.

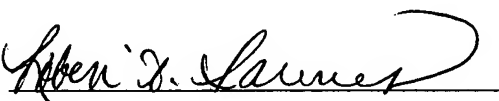
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The present invention uses a vacuum and a restraining member to assist in rapidly drying sand molds without producing cracks and/or voids in the molds. This is neither taught nor suggested by these references.

Favorable consideration of this Amendment is respectfully requested. Should the Examiner wish to discuss this matter, the Examiner is welcome to contact the under-signed representative for the Applicants.

Respectfully submitted,

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